

Attorney Docket No.: 1017.P049US

09/982,688

REMARKS

Applicant appreciates the time taken by the Examiner to review Applicant's present application. This application has been carefully reviewed in light of the Official Action mailed January 13, 2005. Applicant respectfully requests reconsideration and favorable action in this case.

Rejections under 35 USC § 112

Claims 1-56 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirements. The Examiner states that the claims contain subject matter which was not described in this specification in such a way as to reasonably convey to one skilled in the art that their inventors at the time of the application was filed have possession of the claimed invention.

Relating to the term optimize, the Examiner states that the specification used in the term optimize throughout does not provide any specific "end" or objective to be achieved. Applicant respectfully submits that the term optimize means "to improve." Webster's Second New College Dictionary (published by Houghton Mifflin Company New York, copyright 1995, page 769). Applicant respectfully submits that there is a difference between the terms "optimized" and "optimum" wherein optimum surpasses all others in quality, while optimized allows for improved or favorable. Therefore, Applicant respectfully submits that as the term optimized is used throughout the specification, it means that the conditions may be improved in order to achieve a more favorable outcome. Such an outcome specifically addresses the reduced signal-to-noise ratio that limits the quality of data acquired through ultrasonic testing in prior systems as discussed in the background. This reduced ability may limit prior ultrasonic testing methods from detecting features within the objects. Thus, the smaller size defects within an object to be tested may be undetectable with the lower SNR of prior systems. This reduced SNR is identified as a problem associated with existing ultrasound detectors within the background. (09/982,688, page 2, line 28 - page 3, line 14.)

Applicant respectfully submits that the present invention provides a system and method when compared to the prior art of addressing the reduced signal-to-noise ration associated with prior art systems. This object is stated as the present invention provides "a system for generating an improved sonic response in a manufactured object." (09/982,688, page 4, lines 2-3.) Thus, Applicant respectfully submits that the present invention provides a system and method for adaptively testing or detecting physical attributes within a manufactured object by manipulating the

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operating characteristics of a sonic generation system in order to improve the signal-to-noise ratio associated with the particular sonic energy signal generated within the manufactured object.

With respect to the term operating characteristic, Applicant respectfully submits that operating characteristics may refer to those characteristics associated with the sonic energy signal generator. For example, when the sonic energy signal generator is a laser pulsed generator, the operating characteristics may include "optical wave length, pulsed and plural profile, power, beam shape, beam size, time delay between pulses, and others." (09/982,688, page 12, lines 12-14.) However, the sonic energy signal generator may take several forms. "For example, the sonic energy signal generator may be a transducer-induced ultrasonic wave generator, a laser ultrasound system, an electromagnetic acoustic transducer (EMAT), a plasma induced ultrasound system, or others." (09/982,688, page 10, lines 18-21.) The manipulation of the operating characteristics of the sonic energy signal generator results in "an improved sonic energy signal" (09/982,688, page 12, lines 28-29.)

The claims have been amended to more clearly state the present invention as described above. Thus the applicant respectfully request that the examiner withdraw his objects to the claims under 35 U.S.C. § 112.

Rejections under 35 USC § 102

Claims 1-56 stand rejected under 35 U.S.C. 102(b) as being anticipated by Davis (U.S. Patent No. 4,276,779). The examiner states that Davis discloses an array of sonic transducers and that FIG. 1 provides a signal generator to provide a waveform of the signal to be transmitted. Dial 62 of Switch 60 controls an operating characteristic of the signal generator to select the optimum mode of transmission in accordance with the range of distances to the subject matter being imaged. Selection of the optimum mode implies that there is no room for improvement within the specific conditions and constraints of the system.

The applicant that Davis can be distinguished from the present invention as claimed. The applicant respectfully submits that the present invention, as contained in the currently amended claims, provides a system and method operable to generate, within a manufactured object, sonic energy signals that result in an improved signal to noise ratio (SNR) of the sampled sonic energy signals. This is achieved by manipulating a set of operating characteristics associated with the sonic energy signal generator. A processing system, such as the model processor, in independent

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Claim 1, is operable to determine, with a potentially automated process, a set of operating characteristics that result in the improved SNR of the sampled sonic energy signals wherein the sonic energy signal generator is then operable to generate alternate sonic energy signals based on the determined (improved or optimized) set of operating characteristics that result in the improved SNR of the sampled sonic energy signal. This differs from the system provided in Davis which allows an operator to manually select from different predetermined modes of transmission in accordance with the range of distances to the subject matter being imaged.

Furthermore, the applicant respectfully submits that the examiner's implication that optimize is entirely synonymous with optimum is incorrect. As previously stated, optimize may be defined as "to improve", while optimum is defined as "the best or most favorable." Thus, the applicant respectfully submits that optimize as used throughout the specification means improved rather than best and that the present invention is operable to create an improved sonic energy signal by manipulating the operating characteristics of the signal energy generator in order to result in an improved SNR of the sampled sonic energy signal in order to overcome the reduced SNR commonly experienced in prior art solutions.

The applicant respectfully submits that Claims 1-56 as amended overcome the examiners rejections under both 35 U.S.C. § 112 and 35 U.S.C. § 102. Applicant, therefore, respectfully requests the Examiner to reconsider and withdraw the rejection to allow Claim 1-56.

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CONCLUSION

Applicant has now made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicant respectfully requests full allowance of Claims 1-56.

While Applicants believe no fee is due with this transmission, if any fees are due, the Commissioner is hereby authorized to charge Deposit Account No. 50-2240 of Koestner Bertani.

Respectfully submitted,

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Dated: April 13, 2005

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